

Listing of the Claims

1. (Currently amended) An integrated process for production and upgrading of heavy and extra-heavy crude oil, comprising (a) reforming of hydrocarbons ~~such as natural gas~~ to produce gases comprised of hydrogen, CO₂ and steam (b) separating the produced hydrogen from the CO₂, steam and any other gases to give a hydrogen rich fraction and a CO₂ rich fraction and steam, (c) injecting the steam alone or in combination with the CO₂ rich fraction into a reservoir containing one of heavy or extra heavy oil to increase the oil recovery, and (d) upgrading/refining one or both of upgrading and refining of the heavy or extra heavy oil to finished products by extensive hydroprocessing, comprising ~~several~~ a plurality of steps of hydrocracking and hydrotreating, using the hydrogen rich fraction.
2. (original) The process of claim 1, wherein the reforming in step (a) is steam reforming.
3. (original) The process of claim 2, wherein the reforming is performed under supercritical conditions.
4. (Currently amended) The process of claim 1, wherein the reforming in step (a) is one of autothermal reforming or partial oxidation.
5. (original) The process of claim 4, wherein air is used as oxidizer in the autothermal reformer or in the partial oxidation reactor.
6. (Currently amended) The process of claim 3, comprising the additional step of air separation to produce purified oxygen comprising more than 95%, ~~preferably more than 98%~~ oxygen, that is used as oxidizer in the reforming.

7. (original) The process of claim 6, wherein purified nitrogen co-produced with the purified oxygen is injected into the reservoir together with the CO₂ rich fraction in step (d) to stimulate the oil production.

8. (Currently amended) The process according to ~~claim 7 any of the preceding claims~~, wherein CO₂ produced during the reforming process is reacted in a water gas shift reaction to produce additional CO₂ and H₂.

9. (Currently amended) The process according to ~~claim 1 any of the preceding claims~~, wherein the heavy or extra heavy oil is partially upgraded in the reservoir by hydrogen injection.

10. (Currently amended) The process according to ~~claim 1 any of the claims 1 to 8~~, wherein the heavy or extra heavy oil is partially upgraded in a downhole upgrading unit.

11. (Currently amended) The process according to ~~claim 1 any of the preceding claims~~, wherein the heavy or extra heavy oil is upgraded on one of an offshore or onshore upgrading facility, employing particular compact process unit design, ~~such as compact gas reforming~~.

12. (Currently amended) The process according to ~~claim 1 any of the preceding claims~~, wherein at least a part of the heat to increase recovery of the heavy or extra heavy oil is generated by in-situ combustion.

13. (Currently amended) The process according to ~~claim 1 any of the claims 1 to 11~~, wherein geothermal heat is used to increase recovery and transport of the heavy or extra heavy oil.

14. (New) The process of claim 3 comprising the additional step of air separation to produce purified oxygen comprising more than 98% oxygen that is used as oxidizer in the reforming.
15. (New) The process of claim 1 wherein the hydrocarbon reformed is natural gas.
16. (New) The process according to claim 15 wherein CO₂ produced during the reforming process is reacted in a water gas shift reaction to produce additional CO₂ and H₂.
17. (New) The process according to claim 1 wherein CO₂ produced during the reforming process is reacted in a water gas shift reaction to produce additional CO₂ and H₂.
18. (New) The process according to claim 5 wherein CO₂ produced during the reforming process is reacted in a water gas shift reaction to produce additional CO₂ and H₂.
19. (New) The process according to claim 7 wherein the heavy or extra heavy oil is partially upgraded in the reservoir by hydrogen injection.
20. (New) The process according to claim 19 wherein the heavy or extra heavy oil is partially upgraded in a downhole upgrading unit.
21. (New) The process according to claim 8 wherein the heavy or extra heavy oil is partially upgraded in a downhole upgrading unit.
22. (New) The process according to claim 7 wherein the heavy or extra heavy oil is upgraded on one of an offshore or onshore upgrading facility employing a compact process unit design.

23. (New) The process according to claim 21 wherein the heavy or extra heavy oil is upgraded on one of an offshore or onshore upgrading facility employing a compact process unit design.

24. (New) The process of claim 23 wherein the compact process unit design is compact gas reforming.

25. (New) The process according to claim 23 wherein at least a part of the heat to increase recovery of the heavy or extra heavy oil is generated by in-situ combustion.

26. (New) The process according to claim 25 wherein geothermal heat is used to increase recovery and transport of the heavy or extra heavy oil.

27. (New) The process according to claim 7 wherein at least a part of the heat to increase recovery of the heavy or extra heavy oil is generated by in-situ combustion.

28. (New) The process according to claim 7 wherein geothermal heat is used to increase recovery and transport of the heavy or extra heavy oil.

29. (New) The process according to claim 11 wherein the particular compact process unit design is compact gas reforming.